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AMSAT NEWS SERVICE
ANS-032

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** SPECIAL SUITSAT EDITION **
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This special edition of ANS is a free news and information service of AMSAT North America, The Radio Amateur Satellite Corporation. ANS reports on the activities of a worldwide group of Amateur Radio operators who share an active interest in designing, building, launching and communicating through analog and digital Amateur Radio satellites.

Please send any amateur satellite news or reports to:
ans-editor@amsat.org

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SB SAT @ AMSAT $ANS-032.01
Two More Days Until SuitSat!

AMSAT News Service Bulletin 032.01
From AMSAT HQ SILVER SPRING, MD.
February 1, 2006
To All RADIO AMATEURS
BID: $ANS-032.01

Frank Bauer, KA3HDO, who is the ARISS International Chairman and AMSAT's V.P. for Human Spaceflight Programs, reminds us if all goes well, SuitSat will be deployed in 2 days. Are you ready?

SuitSat will be deployed during a Russian EVA scheduled to take place on Friday, February 3 at approximately 22:20 UTC. NASA TV will provide live coverage starting at 21:30 UTC. For digital downlink information and access to NASA TV's Public Channel on the Web in RealPlayer, RealAudio, or Windows Media Player formats, visit http://www.nasa.gov/ntv.

Once the crew is outside on their EVA, they turn all three switches on the control box to the ON position and deploy the spacesuit from ISS. About eight minutes after the crew flips the three switches the Kenwood transmitter will power up. About eight minutes after that, the first voicetelemetry message will be transmitted and SuitSat operations begin! This 16 minute delay is a crew safety measure.

Next, Russian Cosmonaut Tokarev will carefully jettison SuitSat-1 by pushing the suit away at about a 30-degree angle upward and about 10 degrees to the left of the back of the station.

Once activated, those who hear SuitSat transmissions on 145.99 MHz are asked to enter their realtime data on the SuitSat website, http://www.suitsat.org/ so that participants around the world can track the satellite.

When first released SuitSat will be in pretty much the same orbit as the International Space Station. This means initially the ISS tracking parameters can also be used to track SuitSat. SuitSat will not have any thrust to maintain its orbit so it will begin to reenter the Earth's atmosphere after a few weeks. As SuitSat's orbit decays it will "fall" closer to Earth. As the days go by, SuitSat's lower orbit will begin to lead the ISS orbit so you will need to begin listening a few minutes earlier than when the ISS is predicted to come over your location.

You can track the location of the ISS on the AMSAT website at:
http://www.amsat.org/amsat-new/tools/predict/satloc.php?lang=en&satellite=IS
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You can also get a listing of ISS passes at:
http://www.amsat.org/amsat-new/tools/predict/
Just enter your location and select the ISS.

Educational Outreach reports (at schools or informal education sites) as well as Slow Scan TV images can be sent to suitsat@comcast.net. This information will be compiled by the ARISS team.

[ANS thanks Frank, KA3HDO and the ARISS Team for the above information]

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SB SAT @ AMSAT $ANS-032.02
Commemorative SuitSat QSL Certificate Will Be Available

AMSAT News Service Bulletin 032.02
From AMSAT HQ SILVER SPRING, MD.
February 1, 2006
To All RADIO AMATEURS
BID: $ANS-032.02

Students, scouts, teachers, ham radio operators, and the general public are encouraged to track the space suit, hear the conversations from space, copy the suit telemetry and capture the picture.

There will also be a special endorsement on the award certificate for those students who receive the "special words" that are embedded in the messages from our SuitSat student "crew members." These special words are in different languages - English, French, German, Spanish, Russian, and Japanese. You are encouraged to record the SuitSat downlink audio and get help from fellow students who know these languages.

Radio Amateurs, students and teachers who hear SuitSat should send their signal reports with a large (9x12 inch) self-addressed stamped envelope to one of these addresses listed below:

* USA: ARRL Headquarters
SuitSat QSL
225 Main Street
Newington, CT 06111-1494 USA

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    * Canada: Radio Amateurs of Canada
              SuitSat QSL
              720 Belfast Road
              Suite 217 Ottawa Ontario K1G 0Z5

    * Europe: F1MOJ - Mr CANDEBAT Christophe
              SuitSat Europe QSL Manager
              7 Rue Roger Bernard
              30470 AIMARGUES FRANCE

    * Japan:  SuitSat Japan QSL
              JARL International Section
              Tokyo 170-8073 JAPAN

    * Russia: Alexander Davydov, RN3DK
              Novo - Mytishchinsky prospekt 52 - 111
              Mytishchi 18
              Moskovskaya obl. 141018, RUSSIA

    * Other Countries:  Please use the US or Canadian address above.

Also included in this spacesuit is a computer Compact Disk (CD) with
images of over 300 items collected from schools and educational organ-
izations around the world. These include creative works of art from
students as well as student signatures, school or scout logos, and
class or group pictures. Students, schools and educational organizations
that participated in the development of this disk earlier this year
will all be part of the SuitSat spacewalk---as their creative works,
signatures and pictures all float in space!

[ANS thanks the ARISS team for the above information]

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SB SAT @ AMSAT $ANS-032.03
Amateur Radio Performs Key Role in SuitSat's Main Mission

AMSAT News Service Bulletin 032.03
From AMSAT HQ SILVER SPRING, MD.
February 1, 2006
To All RADIO AMATEURS
BID: $ANS-032.03

The idea for SuitSat was first conceived by the ARISS-Russia team, led
by Sergey Samburov, RV3DR, and was extensively discussed at the joint
AMSAT Symposium/ARISS International Partner meeting in October 2004.
The project, is being led by project manager A. P. Alexandrov and Deputy
Project Manager A. Poleshuk from RSC Energia, located in Korolev (Moscow
area) Russia. The project was developed primarily by a joint US/Russian
team. On the US side, the hardware project development was led by AMSAT
member Lou McFadin, W5DID.

The official name for this mission is SuitSat-1, also called Radioskaf or
Radio Sputnik in Russian.  SuitSat-1 is the first live test of using the
old spacesuits as inexpensive on-orbit platforms for instrumentation,
space photography, telemetry, and communications.

Exposed to the full rays of the sun in space will SuitSat be able to
operate in these extreme conditions?  How will communications be affected
if SuitSat begins to tumble?  How long will the batteries last?  Amateur
Radio will be pioneering the answers to these questions in the days to
come.
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An additional benefit is the opportunity to bring space science into the classroom.

[ANS thanks ARISS-Russia and Energia for the above information]

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SB SAT @ AMSAT $ANS-032.04
Area Coordinator Makes Educational Outreach Materials Available On-line

AMSAT News Service Bulletin 032.04
From AMSAT HQ SILVER SPRING, MD.
February 1, 2006
To All RADIO AMATEURS
BID: $ANS-032.04

Pat Kilroy, N8PK and David Bern, W2LNX provided a well received educational mission this past week to Parkland Middle School in the Washington, DC area. Included below is Pat's documentation which can be used with NASA and AMSAT materials for SuitSat educational opportunities in the coming days.

Also included are photos from the school visit.

SUITSAT: A Special (and Brief) Opportunity
Updated January 25, 2006

Original material is at: http://www.patkilroy.com/amsat-dc/

An old Russian space suit will be tossed off of the ISS during a spacewalk on February 3, 2006 (or after). The suit will be empty inside except for radio gear assembled for a special occasion.

Transmitting nearly continuously, kids around the world will enjoy its spoken messages over the life of the batteries, designed to last for a few days, perhaps a week.

The "SuitSat" will co-orbit with the space station for a while. Atmospheric drag will drift it into "its own" orbit, a decaying one, and will gradually warm up the suit and the stuff inside.

Listen for the 8-minute cycle of announcements when it flies over-head. You will hear "spoken" MET in minutes, the inside temperature in degrees C (not F) and battery voltage telemetry, pre-recorded greetings in multiple languages, a single "cell phone quality" SSTV picture frame in Robot-36 mode, as well as the voice ID on 145.990 MHz FM at 500 mW into its low-gain omni antenna.

SuitSat will re-enter the atmosphere in a few weeks, long after the batteries run dry. Time is of the essence and you ought to prepare now for this unique and fun experiment.

You may download a 6-page color document by Gould Smith, WA4SXM, and Steve Bible, N7HPR, (600 KB in PDF, dated November 5, 2005) at http://www.patkilroy.com/amsat-dc/SuitSat%20-%20A%20Unique%20Satellite.pdf

This has a full description of the event, additional technical details and several great photos. Go to the main AMSAT-NA web site for additional descriptions, late breaking news, and tracking data updated daily after SuitSat is deployed.

For lighter reading you may download a copy of a NASA press release

written for kids:
http://www.patkilroy.com/amsat-dc/NASA_SuitSat_kids.pdf

Kids are welcome to take this copy to their school to ask permission to listen for SuitSat during class time. In addition to this press release, a sheet of technical details and the schedule for a televised (and webcast) press conference is offered for their teacher or mentor at: http://www.patkilroy.com/amsat-dc/ANS%20SuitSat%202006-0122pk.pdf

Enjoy these three documents. Each one has links noted where you can get updated information.

For those Amateur Radio operators in the greater Maryland and D.C. area, PLEASE REPORT YOUR OBSERVATIONS to us on the amsat-dc mail list. Of special interest to me are results of antenna A/B tests (omni vs. yagi reception) and your results of Doppler compensation (of how valuable it is or was or was not for the SuitSat experiment). Did you bother to make an audio recording of a pass? WAV or mp3? Any students involved? K-5, 6-8, 9-12, college, family, club or general public demo?

Get this into the schools! PASS THE WORD about this special event to other radio amateurs so they can prepare their station and share the news further.

Have fun!

Sincerely,

Pat Kilroy, N8PK
AMSAT Area Coordinator
Greater MDC Area

[ANS thanks Pat, N8PK for the above information]

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SB SAT @ AMSAT $ANS-032.05
ISS Packet Turned Off for Duration of SuitSat

AMSAT News Service Bulletin 032.05
From AMSAT HQ SILVER SPRING, MD.
February 1, 2006
To All RADIO AMATEURS
BID: $ANS-032.05

For the duration of the SuitSat project, the ISS packet mode will be turned OFF. Please do not transmit any packet or voice data on 145.990 MHz which is also the SuitSat down link frequency.

[ANS thanks Miles, WF1F for the above information]

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SB SAT @ AMSAT $ANS-032.06
ISS Cross-Band Repeater May Relay SuitSat Signals on 437.800 MHz

AMSAT News Service Bulletin 032.06
From AMSAT HQ SILVER SPRING, MD.
February 1, 2006
To All RADIO AMATEURS
BID: $ANS-032.06

There is a possibility that the ISS Kenwood D700 may be configured
to act as a telemetry cross band repeater for the SuitSat project.

The Russian team is working on the details to program the D700 to
retransmit the telemetry from the SuitSat via 437.800 MHz FM.
The reason for the rebroadcast is to extend the listening range
of the SuitSat project.

When SuitSat is launched, it will be flying very close to the ISS.
As the days go by, the distance between the two satellites will
gradually increase to hundreds of miles. SuitSat will eventually
lead the ISS by several minutes.

The cross band telemetry mode can in theory double the listening
range of the SuitSat project. The 2-6 day battery life of the
SuitSat will be the actual limiting factor of this project.

[ANS thanks Miles, WF1F for the above information]

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SB SAT @ AMSAT $ANS-032.07
How to Receive SuitSat's SSTV Image

AMSAT News Service Bulletin 032.07
From AMSAT HQ SILVER SPRING, MD.
February 1, 2006
To All RADIO AMATEURS
BID: $ANS-032.07

Slow Scan Television, or SSTV, is a method used by Amateur Radio
stations to send JPG still images around the world. SSTV translates
the picture information in an audio format suitable for transmission
by radio.

The SuitSat project will transmit telemetry, pre-recorded voice messages
and one SSTV image using the Robot 36 format. The message cycle will
repeat approximately every 9 minutes.

To view the SSTV image you will need to connect your computer to the
speaker of your radio. Your computer will require SSTV decoding software
available from the sources below:

ChromaPix
http://www.barberdsp.com/

W95SSTV by Silicon Pixels
http://www.barberdsp.com/w95sstv/w95dload.htm

MMSSTV
http://mmhamsoft.ham-radio.ch/

Start with this web page to help you learn more about Slow Scan TV:
http://www.marexmg.org/fileshtml/sstvlinkpage.html

For tips on how to use SSTV, Packet and Voice via the ISS see:
http://www.marexmg.org/fileshtml/howtouseiss.html

Excellent information with links to SSTV software downloads can be
found on W2MU's SSTV Page: http://www.qsl.net/wm2u/sstv.html

[ANS thanks Miles, WF1F for the above information]

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SB SAT @ AMSAT $ANS-032.08
SuitSat Web Link Compendium

AMSAT News Service Bulletin 032.08
From AMSAT HQ SILVER SPRING, MD.
February 1, 2006
To All RADIO AMATEURS
BID: $ANS-032.08

Here is a summary of the key web pages that were contained within the
SuitSat on-line messages of the past month.

SuitSat overview and project status:
www.amsat.org
www.rac.ca/ariss
http://www.suitsat.org/
www.issfanclub.com
http://www.amsat.org/amsat/archive/sarex/48hour/threads.html

NASA Education Website information for students:
http://www.nasa.gov/audience/forstudents/k-4/home/F_Hearing_Voices.html
http://www.nasa.gov/audience/forstudents/5-8/features/F_Hearing_Voices.html
http://www.nasa.gov/audience/forstudents/9-12/features/F_Hearing_Voices_From
_Space.html
http://www.nasa.gov/audience/forstudents/postsecondary/features/F_Hearing_Vo
ices_From_Space.html

NASA on-orbit photos of SuitSat preparation for deployment:
http://spaceflight.nasa.gov/gallery/images/station/crew-12/ndxpage16.html
http://spaceflight.nasa.gov/gallery/images/station/crew-12/ndxpage17.html

NASA Science press release:
http://science.nasa.gov/headlines/y2006/26jan_suitsat.htm?list791066

The SuitSat press release picked up by the on-line science press with
plenty of positive coverage for amateur radio in space:
http://www.universetoday.com/am/publish/suitsat_satellite.html?2612006
http://www.spacedaily.com/reports/SuitSat_To_Be_Thrown_Overboard_February_3.
html
http://www.space.com/missionlaunches/060127_exp13_eva2_prep.html
http://science.slashdot.org/

Link to NASA TV Webcasts:
http://www.nasa.gov/ntv

From the Energia Web Site:
http://www.energia.ru/english/energia/iss/researches/techn-35.html

AMSAT-UK Stories on SuitSat:
http://www.southgatearc.org/

New York Times article on SuitSat:
http://www.nytimes.com/2006/01/28/science/28suit.html?_r=1

[ANS thanks the ARISS Team for the above information]

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In addition to regular membership, AMSAT offers membership in the
President's Club. Members of the President's Club, as sustaining donors
to AMSAT Project Funds, will be eligible to receive additional benefits.

Application forms are available from the AMSAT Office.

73,
Editor for the SuitSat Special Edition,
JoAnne Maenpaa, WB9JEJ
WB9JEJ at amsat dot org